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HEMERALOPIA WITHOUT APPRECIABLE LESION.

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Hemeralopia in association with pigmentary retinitis, of which disease indeed it is the chief subjective symptom, is sufficiently common to every ophthalmic surgeon to pass without comment. Idiopathic hemeralopia, as it has been called, "in which there are no certain ophthalmoscopical alterations, and for which no certain causes can be found"—*Arch. Oph.*, xii, 191—is, on the contrary, sufficiently rare to make a marked case worthy of record.

In addition to its recurrence in pigmentary retinitis, hemeralopia has been observed in connection with various affections of the liver, and in attacks of scurvy. Hemeralopia, too, without appreciable lesion, or with unusual etiological factors, has been noted by various observers. I append a few of the cases that our literature offers, as having an illustrative bearing upon my topic:

Sedan—*Rec. d'oph.*, Nov., 1885—reports a case of hemeralopia in which there was no disturbance of the color sense, no pigmentary retinitis, and no limitation of the visual field.

Dr. Bader, in *Oph. Hosp. Reports*, 1859, describes a case of

hemeralopia in which the only thing to observe was that "the fundus round the optic nerve entrance had a bluish-red tint, as if the choroidal red were seen through a faintly blue-tinted glass.

Prof. Dr. H. Dor, in the *Archives d'Ophtalmologie*, III, 482, gives the details of a case of hemeralopia occurring in the person of a young man 21 years of age. The only lesion observable here was a greyish-white reflex from the fundus instead of the usual red. This whitish reflex extended from the disc in every direction almost to the equator, at which place the ordinary reddish color was apparent.

M. Chibret—*Arch. d'Oph.*, IV, 79—reports congenital hemeralopia in connection with myopia in which the only notable lesions were physiological excavation of the papilla of each eye, and a posterior staphyloma in each.

Without further preface I will give the salient points of a case of absolute hemeralopia which I have had under my observation for about four years. I may say here that the subject of this sketch is not only my patient, but also a valued personal friend. My opportunities therefore for observing, in his person, the characteristic phenomena of hemeralopia have been unusually good.

Mr. G., about 21 years of age, a young man of unusually fine physique and remarkably robust, has, from his earliest recollection, been totally blind in the ordinary darkness of night. If in the country, and consequently away from the street lights of the city, he is utterly helpless if left alone after dark. He says he can see nothing after dark comes on, unless aided by artificial light. In the city where he lives, which is well lighted with electric lamps, he is constantly running into people in the evening, striking himself against trees, etc., and has often hurt himself by these accidents. By daylight he thinks that he sees very well, as well, in fact, as any of his associates. He has suffered from *blepharitis marginalis* for several years, and has been subject to severe headaches. During his younger years he was a somnambulist. I have often seen him, before going to bed, arrange a trap of chairs to prevent himself from wandering out of his room in the event of getting up during

sleep. The action of his heart is irregular, but no lesion of this organ can be detected on repeated and careful auscultation. He has always been deaf; he cannot hear my watch,—the ticking of which can be heard by the average ear at a distance of ten feet,—when it is placed tightly against the ear. The *Mm. tympani* appear normal with the exception perhaps of a slight retraction.

V. R=$^{20}/_{xl}$ with sph. —0.75 ⌒ cyl. —1.25, 20°.
V. R=$^{20}/_{l}$ with sph. —2.00 ⌒ cyl. —0.75, 160°.

The results were obtained after repeated tests and with atropine mydriasis. Graefe's test shows a slight insufficiency of the *recti interni*. Color sense normal in a good light. Bitot's conjunctival plaques are not present. Perimetric measurements show the field in each eye perfect. I have not made the experiment of testing the fields under diminished illumination, though I am sure that the perimeter would indicate hemeralopia very distinctly, were such a trial made. The record of visual power as given above, was made under the best illumination possible in the consulting room. With diminished light the vision fails proportionally. Mr. G. can see stars of the first magnitude and some of the brighter planets, if the atmospheric conditions are favorable, but I do not believe that he has ever seen a star of the second or third magnitude. No other member of this family, so far as I am able to ascertain, has suffered from hemeralopia.

When I examined the eyes of my young friend with the ophthalmoscope for the first time I was unaware of the hemeralopia, and recorded the note in the case-book that nothing unusual about the fundus was to be seen. Since then I have repeatedly made careful examinations and I have noted that the reflex is much darker than is common. The intervascular spaces have faint brownish stripings radiating out from the disc. The papilla is perfectly normal, and no contraction of the retinal arteries can be demonstrated. It must be remembered that my patient has dark hair and a dark skin, and that the abnormal appearances, if they are abnormal, are no more

striking than those which we habitually pass by without notice.

I regard the case as one of more import than simple retinal anæsthesia or "pigmentary retinitis without pigment" as it has been called. That there is some central defect in the general innervation, I think is evidenced by the neurotic symptoms, some of which have been mentioned above. The deafness without visible lesion seems to me to be exactly parallel in its etiology with the blindness. Mr. G. has simply a lack of sensitiveness in these organs that prevents him from receiving the delicate impressions which are ordinarily perceived by others. I have made no experiments in regard to the other senses, but I have no doubt that, could delicate tests of the taste and smell be made, we would find these senses, too, below the average of acuteness.

My prognosis is favorable. Dr. Noyes in his recent work says: "Hemeralopia without pigmentation is less prone to increased loss of sight and more frequently comes to a stand" than hemeralopia dependent on pigmentary retinitis.

I have prescribed the proper glasses. The blepharitis and headaches, by their use, have disappeared; but after three years of pretty constant use of the glasses there have been neither improvement in the visual power nor apparent diminution of the principal subjective symptom, the hemeralopia.

INTERNATIONAL MEDICAL CONGRESS.[1]

SECTION OF OPHTHALMOLOGY.

DR. J. J. CHISOLM, OF BALTIMORE, MD., PRESIDENT.

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MONDAY, SEPTEMBER 5TH—FIRST DAY—AFTERNOON SESSION.

The President, on taking the chair, expressed his high appreciation of the honor conferred upon him, and referred in feeling terms to the regret felt at the absence of Dr. E. Williams, of Cincinnati, the unanimous choice for the position. He referred to Dr. Williams as the pioneer in ophthalmology, the first of the specialties to branch out as a separate department of medical science, and the difficulties he had met with when devoting himself to diseases of the eye and ear exclusively. To-day it is acknowledged that progress in general medicine is attained only through studies and researches in special departments, and every organ has its investigator. The assembly of this International Medical Congress is, to a large extent, an assembly of eminent specialists from great distances, at personal expense, to interchange their thoughts and conclusions upon various subjects. He referred to the vastness of the subject of the human eye alone, and that there is no disease of the eye so thoroughly mastered that further information is not desired. Operations are still far from perfect, and the origin and nature of glaucoma, for instance, is not clearly defined.

The microbic element in eye affections was also mentioned, and the intimate relation of eye diseases to distant reflexes.

In concluding, he repeated his welcome to the members of

[1]This report of the Section of Ophthalmology we owe to the courtesy of Messrs. W. Wood & Co., the publishers of the N. Y. *Medical Record*, to whom we herewith give our thanks.

the Section as friends and co-workers in the department of ophthalmology.

The first paper of the session was on

EYE TROUBLES IN THEIR RELATION TO OCCIPITAL DISEASE,

by Dr. A. Mooren, of Düsseldorf, Germany.

Dr. Mooren introduced his subject by a recital of the initial observations of Huguenin and the experimental researches of Munk, who removed the visual spheres in the occipital lobe of the dog, and found that it rendered the animal blind, but left intact all the functions and movements not dependent on vision. Then, after referring to the clinical observations of Hirschberg, Pooley, Pflüger, Hughlings-Jackson, Gowers and others, he entered into an analysis of 42 different cases of his own, in which hemianopsia was present, 14 of which were on the right side, 19 on the left side, 4 temporal and 5 nasal restriction. The causes were various.

He found that hemianopsia dependent upon occipital lobe disease is not complicated with mydriasis or capillary apoplexies on the insertion of the optic nerve. It is the merit of Willbrand to have collected the different observations made on this sense. He formulates as follows:

The color-sense is to be placed on the most exterior cortex of the occipital lobe; beneath this another layer, the centre for acuteness of vision. In a third layer beneath this again there exists, next to Gratiolet's visual radiations, the light-centre, *i. e.*, the centre for visual field. Destruction of the upper or color-perception layer may take place without affecting the underlying layers, as is demonstrated by the observations of Bjernum and Samelsohn, and Dr. Mooren's observations of the loss of color perception in his cases without necessary impairment of vision are in accordance with those of previous observers.

He referred to the determination by Nothnagel of the occipital limits of pathological changes, by means of the method of the smaller focus. After the observations of Haab, Hu-

guenin, Feré and Seguin, this neurologist places the centre of optic perception in the cortex of the cuneus and first occipital convolution. This is confirmed by sections made by Curschmann.

Dr. Gradle, of Chicago, mentioned a case which appeared to him to have a bearing on the subject under discussion. A child, during an attack of what was supposed to be scarlet fever, had pain in the back of the head, which was drawn backward. Some time afterward, when seen by the narrator, it appeared to be blind, but the pupils were both quite active to light. Treatment by potassium iodide appeared to produce a beneficial result, and when last seen vision seemed to be completely restored.

Dr. Dickinson, of St. Louis, asked if Professor Mooren adopts the theory of total or partial decussation of the optic nerve fibers, to which Mooren replied by a diagram, showing the distribution of fibers from the right side to the outer half of the right retina and the inner or nasal half of the left, and so with the other side.

Dr. Marmion, of Washington, reported the case of a lady who had gradually developed impairment of perception, followed by diplopia. A suspicion of specific infection induced him to prescribe mercury and the iodides. Ataxic phenomena came on, and she finally expired. Autopsy revealed a large gumma of the right inferior lobe of the cerebellum.

Dr. Behrmann, of Washington, reported a case of blindness produced by caffein, which acted by continued anæmia of the occipital lobes of the cerebrum, finally ending in atrophy.

The President presented in this connection a case of blindness with occipital disease. Some years ago pain began to be felt behind the left ear, shortly followed by swelling in the same region. The swelling gradually increased, and now a softish tumor of considerable size can be seen and felt, over which the bone has been absorbed. In the later period of its growth the hearing in the left ear became dull, and the right eye became blind. He could still read with the left eye. At that time both optic nerves appeared white and atrophic, one

not more than the other. The pain has now almost disappeared, but he has only perception of light in the left eye.

Dr. Ole Bull, of Christiana, Norway, read a paper entitled:

Pathological Changes in the Retinal Vessels.

He had seen eighteen cases of disease of the retinal vessels in six thousand five hundred cases of eye disease. In some there were emboli, in others what appeared to be constriction or narrowing of the retinal vessels. He noted in some of the cases occasional spasmodic constriction of the arteries, with resulting anæmia and loss of vision, with some recoveries of vision, as distinguished from true emboli. Thrombus and gumma were referred to as causes of pathological changes in the vessels, in some cases distention, in others constriction, resulting. In all cases of organic change, serious impairment of vision or total blindness resulted.

Dr. P. D. Keyser, of Philadelphia, questioned as to whether in many of the cases it was a true embolism or a contraction of the arteries. A case which came to him blind from what appeared to be embolism, recovered good central vision, but had a field only two inches square. The treatment was galvanism. He had questioned whether, if the treatment had been commenced earlier, the vision and field might not have been entirely restored.

Dr. A. Heyl, of Philadelphia, questioned as to whether it was embolism or a loss of blood tension, as in a case of blindness after post-partum hæmorrhage, where the blood-amount is much lessened and tension much diminished. He also believed that one element in the blood-tension is the contractile force of the endothelium of the blood-vessel. When the tension is diminished this force comes into play, especially in the retinal artery as a terminal vessel without anastomosis. He cited a case of sudden loss of vision in a young lady with no heart or kidney disease, not especially anæmic, but of a somewhat waxy cast of complexion. It looked like embolism. Treatment was by palpation or percussion over the frontal and

temporal adjacent region, by means of a rubber ball on a stick, and had seemed to be beneficial. He also thought that acute glaucoma might be a congestion caused by a sudden disturbance of the same nature in the circulatory system.

Dr. Bull closed the discussion by expressing his belief that many of these troubles are due to trophic affections, with no disease or affection of any organ elsewhere.

The paper by Dr. E. Smith, of Detroit, Mich., on *Treatment of Abscesses and Ulcerations of the Cornea by Jéquirity*, was postponed till a later session by unanimous consent.

Dr. Leartus Conner, of Detroit, Mich., read a paper entitled:

Hot Water in the Treatment of Eye Diseases.

Dr. Conner stated that that remedy was sought after which would most certainly induce, first, good feeding of the tissue; second, removal of morbid products and morbific agents; and third, the promotion of speedy repair. Such an agent is hot water in a great variety of eye affections, such as mild catarrhal and phlyctenular conjunctivitis, corneitis, affections of the sclera and iris, and even, in some cases, retinal hyperæmia. In iritis, where the pupil refuses to respond to mydriatics, hot water will exert a marked effect in assisting dilatation of the pupil. Similar beneficial results in reducing inflammatory action had been noticed by him in catarrhal and purulent ophthalmia, in relieving the pain in glaucoma and acute dacryocystitis.

There is no morbid state of the eye on which it may not exert beneficial influence. The results reported by divers observers vary with the different modes of using it. The water should be as hot as the end of the forefinger will bear without discomfort. The method preferred by the essayist was to take a common tumbler, fill it to the brim with hot water, and, inclining the head slightly forward, apply the rim of the tumbler to the side of the nose and to the brow and cheek about the eye, which brings the eye itself actually into the water.

The amount of water loses its heat slowly, and does not require frequent changing, and the eye may be kept in hot water with very little trouble for hours at a time. Antiseptics may be added, and the remedy is easily attainable with means for application. It is safe without the watchful care of the physician, while moist heat by any solid substance, as poultices, should never be used except under the direct supervision of the attendant.

Poultices are unsafe and unreliable means of applying heat to the eye; also dirty, especially on denuded surfaces. Compresses are less objectionable, and may be used as a substitute for hot water.

Local effects: 1. Contraction of blood-vessels in and about the eye. Controls hæmorrhages better than cold water, and blanches the tissues in conjunctivitis, blepharitis, phlyctenulæ; and after the use of hot water the ophthalmoscope shows the retinal vessels to be reduced in size. In one case where drawings were made of the vessels before and after, the difference was very marked, and the relief of retinal congestion and improvement of vision very noticeable.

The temperature of the water must vary with the sensation of the patient. The tissues should not be exhausted.

2. Hot water will wash away or destroy all morbific secretions or excretions. At a temperature of 132° F. it destroys the bacillus of anthrax and many others, and many eyes can bear a somewhat higher temperature.

3. It promotes the healthful activity of reparative tissue or protoplasm.

4. It exerts direct power in relieving muscular fatigue and spasm.

Dr. Dudley S. Reynolds, of Louisville, Ky., asked whether the reader of the paper had used hot water, as he had stated, immediately after a strabismus operation, to increase the effect by causing contraction of the cut muscle.

In reply it was stated that contraction was stimulated in the muscle antagonistic to the cut muscle, and the effect increased in that way.

Dr. Thompson, of Indianapolis, Ind., defended the poultice as used in affections of the anterior part of the uveal tract and sclera. He had had excoriations produced by hot water, and then had to use poultices. Chamomile or slippery elm, in cheese-cloth, was with him the preferable form.

Dr. P. D. Keyser, of Philadelphia, Pa., spoke of DeWecker's use of hot water a long time ago in conjunctivitis diphtheritica, as he said, to soften the tissues and hasten absorption. The speaker had found diphtheritic conjunctivitis rare in this country, but membrane on the conjunctiva not so uncommon. He had used hot compresses over the eyes, and kept them hot by spraying with steam directed on the compresses from an ordinary kettle by a forked tube. The compresses should be applied over the eyes alone, and not over the frontal sinus between the eyes.

Dr. H. Power, of London, was in favor of dry poultices rather than moist ones. He has chamomile flowers or hops heated in a dry kettle, stirred till hot through; then applied in a bag or pillow to the part affected. He objects to the use of the steam from the kettle.

Dr. Eugene Smith, of Detroit, Mich., fully agreed with Dr. Power. He thinks moist heat not advisable in ulcerative keratitis.

Dr. P. T. Huckins, of Los Angeles, Cal., believes in the use of heat in these affections, but finds that the length of time during which the heat should be applied has not been spoken of.

Dr. A. Blitz, of Minneapolis, Minn., has never seen bad results, in all cases of conjunctival or uveal inflammations, from the use of hot water.

Dr. Abadie, of Paris, thinks that not so much stress is now laid upon the employment of hot water in many eye troubles. It has gone out of use in phlyctenular conjunctivitis, and purulent and croupous ophthalmia. In corneal affections, internal medication and proper antiseptic applications are far superior. In infectious corneal ulcers, he uses iodoform powder and antiseptic washings. On the other hand, in iritis with much pain

hot applications are good, but morphia, leeches, and internal administration of quinia sulphate, salicylate of soda, etc., are often all that is necessary.

Dr. Herbert, of Philadelphia, wished to call attention to a mode of applying heat that had not been mentioned, that by means of irrigation; the hot water flowing over the inflamed surface was thus kept at a constant temperature.

Dr. Calhoun, of Atlanta, Ga., spoke of an apparatus which he had sometimes used, a thin rubber bag of proper size filled with hot water and applied to the eye. It could have an inlet-pipe to supply fresh hot water, and an outlet to carry away the cooler portions.

Dr. Hotz, of Chicago, remarked that the diversity of modes of application of heat, with such uniformly good results, tends to show that there must be a principle underlying the mere material, or the manner in which it is applied. He should lay down the principle, therefore, to apply heat where there is a stagnation of blood to be broken, and it will reduce pain and and promote recovery. The feeling of comfort that the patient experiences is the best gauge by which to tell the proper temperature in each particular case.

TUESDAY, SEPTEMBER 6TH—SECOND DAY—MORNING SESSION.

Mr. Henry Power, of London, England, presented a paper entitled

MICROBES IN THE DEVELOPMENT OF EYE DISEASES.

After a historical sketch of the earlier researches of Pasteur and those who followed immediately after him in the discovery of the nature and modes of propagation of microbes, and the demonstration of Huxley and others that diseases were developed by these organisms, and that they would grow and form colonies in especial situations, the reader went over the discovery of the micrococcus of syphilis and the gonococcus of purulent conjunctivitis. Chalazion, pterygium, blepharitis ciliaris, purulent conjunctivitis, kerato-iritis, optic neuritis, cere-

bral meningitis, may be considered to be the result of microbic development. The factors in the production of these effects may be as follows:

1. They may first penetrate into the tissues and use up the pabulum necessary for their growth.

2. They may use up the whole of the oxygen, and so deprive the tissue of a necessary element; or

3. They may throw out what we call ptomaines, poisonous products.

The essayist related a case of a gentleman who after a fatiguing walk of some hours, had a sudden accession of pain in the eye and developed an acute conjunctivitis. His opinion was that, though the tissues in a state of health were able to resist the attack of the ordinary microbes, as found in the air of cities and dense populations, when this power of resistance was diminished by fatigue they were able to effect a lodgment and cause disease. He spoke of the experiment with a long tube, coated in the inside with agar agar or gelatine, and through which microbic air was passed, showing that different varieties of microbes settled and formed colonies at different parts of the inclined tube, illustrating the fact that microbes were heavy enough to settle, and in different degrees.

The lessons which the author of the paper proposed to draw from this were, to avoid all conditions which may lower the condition of the system, remove the patient from the densely populated parts, and in this connection, remember that it has been shown that at sea, at a certain distance from land, the air contains absolutely no microbes. Of course, in crowded ships this condition does not obtain.

Dr. Abadie made a few remarks on the absolute necessity of clean instruments, and cleanliness in regard to all accessories in eye operations, and was followed by Dr. N. Manolescu, of Bucharest, in the same strain.

Dr. Heyl, of Philadelphia, said that it is evident that two general errors in regard to the subject have been developed. One is, that if a remedy will arrest the progress of the microbe

in a gelatine solution, it will be applicable to the diseased conditions produced by that microbe, and also that any antiseptic may be used one for another. The microbe attacks the older and feebler cells in purulent conjunctivitis, and nitrate of silver is of use in destroying these old cells and leaving only the young and vigorous, that are able to resist the microbic attacks. The exacerbations occur as these young cells become older and feebler, and are again cut short by the silver application. Diphtheritic conjunctivitis follows closely the purulent form in course and causation in this connection.

Dr. Heyl found the reason for destructive changes in the cornea in these affections in the different application of the epithelial layer to the subjacent tissue. This was also a factor in hemeralopia, the disease being considered as an epithelial mycosis, the palpebral epithelium being lubricating, while the sclero-corneal is intimately connected with the function of vision.

Hypopyon keratitis is an affection of the lymph itself. There has been a solution of continuity, and the infection gets into the eye. Thus also, in cataract extraction the wound lays the the eye open to the approach of the microbe. In kerato-hypopyon and abscess, a good result was obtained by the use of a salve of agnine having incorporated oleo-resin of cubebs. The application seemed to be quite painful, the patient being kept awake all night by it. A good application is a salve of red cinchona applied on the conjunctiva. A great remedy in kerato-hypopyon is the local application of iodoform to the ulcer.

Dr. B. Baldwin, of Montgomery, Ala., hoped that Dr. Power would also present the surgical side of microbe infection, which is now the liveliest question in eye surgery. He wished to present the other side of the case. In cataract operations he used no protection against the invasion of microbes, except to wash the patient's eye and face. In old hospitals it may be as well to wash and use all these precautions, but in new ones simple attention to cleanliness only is necessary. He referred to remarks by Dr. Lister, in a letter to Dr. Knapp, that

he thought antisepsis not so urgent in eye surgery, the wound being so small. Dr. Baldwin was doubtful whether any better results were obtained now than before the introduction of antisepsis in eye surgery.

Dr. Landolt, of Paris, France, was astonished to see how little attention is paid to antisepsis in eye operations, and that we know too little of bacteria in eye affections. His experience was in favor of a 1 to 5,000 solution of sublimate in extractions. He saw no objection to the solution. It did not prevent union or damage anything.

Dr. Reynolds remarked that he had not for a number of years had suppuration of the cornea after cataract extractions. He insisted on absolute cleanliness, and where that could not be secured declined to operate.

Dr. Keyser remarked that the main argument in favor of antisepsis is its success in operations on all parts of the body all over the world. His predilection was for a saturated solution of boracic acid, and he believed that irritation was caused by the mercuric solution.

Dr. Galezowski, of Paris, thought antisepsis necessary in all eye operations, even in chalazion. He had seen in some cases very dangerous results from neglect of this precaution, suppuration of the eyelids, and destruction of part of the cornea.

Dr. E. Smith, of Detroit, wished to speak on both sides of the question. He thought much was due to cleanliness in operations. He dipped his instruments in alcohol, used saturated solution of boracic acid, and 1 to 5,000 bichloride. He believed that he had a short time ago saved an eye by antisepsis when it had been exposed several hours the day after operation in the immediate neighborhood of panophthalmitis.

Dr. Power, in closing the discussion, said that the remarks of some of the speakers had been somewhat away from the subject of the paper as he had intended it. He drew attention to the propagation of pure cultures from kerato-iritis, and the production of the disease in rabbits.

The practice of dipping instruments, etc., in solution of bo-

racic acid was followed by him in St. Bartholomew's Hospital invariably. He was inclined to think that sublimate in the proportion mentioned is painful. Dr. Baldwin's washing he considered to be really antisepsis. He thought Dr .Galezowski's case of suppuration after chalazion operation was exceptional. He very rarely uses a cataract-knife twice, but prefers to get a new and sharp one from the maker for each extraction. Sharpness and cleanliness of cut are essential to a good result.

Dr. P. D. Keyser, of Philadelphia, Pa., read a paper on

Operative Treatment of Synechiæ Posteriores.

He stated that synechiæ were dangerous to the eye, as a rule, in proportion to the firmness of the adhesion. The danger consisted in the recurrent attacks of iritis caused by the dragging and stretching of the part, resulting in new adhesions, cyclitis, and perhaps atrophy, or sympathetic trouble in the other eye. Of operative procedures, he considered removal of part of the iris not advisable where the centre of the capsule is transparent. After reviewing the various methods in use for breaking up the offending attachments, of which he believed Streatfield's method to be the most successful with a careful and skilful operator, he spoke of their dangers. He objects to Weber's hook, as being too large to manipulate easily and requiring a large opening in the cornea as well as the other methods with loss of aqueous, which prevents contraction of the iris. He exhibited a delicate modified hook which he had used with success for a number of years. The method employed is that recommended by Streatfield, and a small opening is made with any cutting needle, affording opportunity of using the hook with as little loss of aqueous as possible. The adhesion having been broken up, atropia is instilled, and a simple Liebreich bandage applied.

Dr. Galezowski remarked the operation was a very beautiful one, and in many cases afforded good results. He had in five cases of anterior synechia done an operation similar to this, but with a greater hook. The trouble that occurs after is that

fresh adhesions are formed, and as well after iridectomy, which may go on to the production of cataract or irido-choroiditis. He had seen in many cases, after iridectomy, lymph exuded and vision destroyed. If the inflammatory action continues, he advised acupuncture and antiphlogistic measures, and when it has subsided then do the iridectomy, after two or three weeks.

Second Day—Afternoon Session.

The first paper read was by Dr. A. Mooren, of Düsseldorf, Germany, on

The Simplest Method of Cataract Extraction.

He had had an experience of 5,019 extractions since the beginning of his ophthalmological practice in 1855. He had not invented any new instrument. With the progress of antisepsis and anæsthesia, there was less need than formerly of dexterity of manipulation. He regarded cleanliness and disinfection as clearly identical. He avoided the use of carbolic acid on account of its irritant effect. Preparatory to the operation, he washes the whole face of the patient, then instils a few drops of cocaine. Immediately before operating, he washes the everted eyelids with a 3% solution of boracic acid. The operation may be done without a speculum. The only instruments necessary are a Graefe knife, and simple forceps to fix the eyeball. The cut is made downward, and the same knife is used to lacerate the capsule through the intact pupil. Fixation should be abandoned when the patient is restless. Deliver the lens by gentle stroking, then remove the speculum, and rub the closed eyelids over the cornea, and wash again with the same solution of boracic acid. Then a light compress is put on, and retained by means of a strip of adhesive plaster, passing from temple to temple. The plaster should not be allowed to remain longer than four days, on account of its irritant effect upon the skin. In high degrees of

atheroma it is better to do an iridectomy, as there may be a resulting leucoma. In such cases Dr. M. does the combined operation, making the iridectomy upward. In another form of corneal extraction he uses a lance-shaped knife to make the incision and open the capsule. Here he fixes the eye at the lower margin of the cornea. The iris seldom protrudes, and if it does, he cuts it off. In this form of extraction, if traumatic cases be eliminated, there is scarely any bad result. He spoke of modifications in procedure, where the cataract has a hard, large nucleus, and of the necessity for an iridectomy where a foreign body was in the lens, to guard against its being brushed off by the iris during extraction and left in the eye.

Förster's method of ripening cataracts for a few years back has been practised by Dr. M. It consists in puncture of the anterior chamber and sufficient rubbing of the cornea through the closed eyelid. The introduction of instruments into the eye is not necessary. These cases, when complicated with choroiditis, require to be treated with great caution. One case required a year to mature, and a second had an extraction of a half clear lens fifteen months after the puncture, while a third failed entirely to ripen. The after-treatment is complete physical and intellectual rest.

In cases complicated with constitutional diseases, of course, general appropriate treatment is necessary.

Dr. Galezowski, of Paris, prefers extraction through a dilated pupil without iridectomy by corneal section. He makes a sclero-corneal puncture and counter-puncture, bringing out the knife so as to form an ellipsoid incision. With the same knife he makes a vertical incision in the capsule from top to bottom. Pressure below without the blepharostat extrudes the lens. The incision is made in the upper half of the cornea. The accidents are (1) hernia of iris after operation; (2) suppuration of the cornea; (3) iritis; (4) secondary cataract. To prevent hernia iridis do not bring the incision too far out toward the sclero-corneal margin. Then do not open the eye too frequently. If opened every day after operation it makes the patient contract the lids and press out the iris. Do not open

the eye for perhaps five or six days; only remove dressing to note swelling and condition. To meet the second indication a disk of antiseptic gelatine is introduced into the eye under the eyelids, the lids closed over it, and left so. These disks are permeated with sublimate and cocaine. In three hundred cases only two have had suppuration.

The astigmatism existing after cataract-extraction he accounts for in this way: In almost all eyes astigmatism exists both in cornea and lens, that of the lens correcting or neutralizing the corneal aberration. When the lens is removed this correcting element is lost, so that astigmatism is found where it did not appear before operation. If the capsule is hard or tough it is seized with a pair of forceps, drawn within reach, and cut off with scissors.

Dr. N. Manolescù, of Bucharest, read a paper on

CATARACT-EXTRACTION WITHOUT, AS COMPARED WITH EXTRACTION WITH IRIDECTOMY.

In his simple operations he had trouble from prolapse of iris and other complications due to the difficulty of cleaning out the chamber, and he believes the combined operation to be the more reliable, as it lowers the danger from retained matters and iritic complications. He uses corrosive sublimate as a wash, the toothed forceps for removing the anterior capsule, and closes the wound with a rubber spatula. The eye is dressed with a firm close bandage, and he changes it early.

Dr. Landolt, of Paris, France, remarked there never will come a time when only one operation will be the best for all cases of cataract. He himself was greatly in favor of the combined operation, and thought it was better rather to seek a fair degree of useful vision than a symmetrical pupil.

Dr. Abadie, of Paris, finds that extraction without iridectomy may sometimes complicate the reparative process, and it may be difficult to remove cortical substance. He reserves the operation for cases that are healthy, fully ripe, and which promise ease of extraction and good recovery.

Dr. Marmion, of Washington, said that his faith in iridectomy in cataract-extraction had not been shaken by the arguments that had been advanced.

Mr. Power, of London, acknowledged himself a convert to the operation without iridectomy. Three years ago he had thought he should never change his opinion or method. But cocaine had rendered accidents less likely and given the patient more confidence. He made his incision nearer the sclero-corneal junction than Dr. Galezowski, but agreed with him that the less the eye is looked at the better. A very light compress is to be applied over the eye after operation. If suppuration occur, attend to the general health. In regard to iritis, he did not think that iridectomy was any protection against it. In regard to secondary cataract, he had it occur just as many times without as with iridectomy. If prolapse of iris occurs during the operation, cut it off.

Dr. Reynolds, of Louisville, Ky., thought that in cocaine and without general anæsthesia we had eliminated the chief sources of failure in cataract-extractions. In carefully selected cases simple extraction might be preferable. In such cases he uses Graefe's knife, and allows the aqueous humor to escape before completing the section, which he makes as nearly as possible in the plane of the anterior face of the iris. In the combined operation he uses Beer's knife. He attaches importance to the way in which the capsule is divided. He makes a flap opening upward, and it frequently tears in other directions. As to eserine after extractions, if the pupil remains large, use it; if small, do not. He never uses fixation-forceps, but steadies the eye with his fingers. He has no use for an assistant in a cataract-extraction. The dressing is a minute film of absorbent cotton, held in place by a strip of adhesive plaster from lower lid to brow, about an inch wide and one inch and a half long, and renewed daily.

Dr. Keyser, of Philadelphia, objected to one operation for all classes of cases. Before the introduction of cocaine he made the downward section; now he makes the cut upward. He tries to remove a piece of the capsule. He never operates

without examining the urine for albumen. If there is albumen he looks out for iritis. He uses a solution of boracic acid, as sublimate seems to irritate the eye.

Dr. J. L. Thompson, of Indianapolis, found that malaria might cause iritis after extractions.

Dr. Baker, of Cleveland, O., concluded that he could not do without an iridectomy. He follows Mr. Wolf's (of Scotland) suggestion, and makes a small iridectomy, leaving a small pupil, delivers the lens slowly and avoids touching the cornea, saving the patient pain after the operation.

Dr. Landolt prefers to make a large iridectomy if he has a large corneal section, and excise as much iris as he can. A small iridectomy is more dangerous than a large one. It allows one to control the field of operation better. He had not had any irritating effect from sublimate solutions in his cases.

Dr. S. M. Burnett, of Washington, has extracted twenty to twenty-five cases without iridectomy, one of black cataract. He thinks there is no form of cataract that cannot be operated on by this method, and there are no more complications than where iridectomy is made. The removal of cortical substance is more difficult without than with iridectomy. He washes out the cortex.

Dr. E. Smith, of Detroit, thought there was no certain operation that could be laid down for all cases. He found that it was not always convenient to do a preliminary iridectomy some weeks ahead, as the patients objected to more than one operation.

Dr. Beaver, of Reading, Pa., asked whether the simple extraction was applicable in weak and flabby corneæ that fell down in wrinkles when the section was made.

Dr. Valk, of New York, has had made an instrument which combines both methods to some extent. He makes a section, then introduces his retracting forceps, which he exhibited, and tucks the iris back out of the way, delivering the lens over the arms of the forceps. The iris is then allowed to fall back to its place, no violence being done it, and giving a perfectly round pupil with no iritis.

The president, Dr. Chisolm, wished that more had been said on the subject of the introduction of antiseptic fluids and eserine into the eye. He submerges the eye in sublimate solution, or one of biniodide of mercury, makes an iridectomy not as large as the corneal section, and simply closes the eyelids and fastens them together with a strip of diaphonous adhesive plaster clear enough to count the eyelashes through, and if no discharge appears leaves it undisturbed.

Dr. Galezowski, in closing, said that he recognized the two classes of cases, in one of which the simple operation was all that was necessary, while in the other the combined operation was the better adapted.

Mr. Power said in regard to antisepsis that he always uses a new knife, and a sharp one, rarely using the same knife for an extraction more than once. He believes the introduction of fluids into the anterior chamber might be dangerous, and he has not seen benefit from the instillation of eserine.

Wedesday, September 7th—Third Day—Morning Session.

Dr. C. F. Hotz, of Chicago, Ill., read a paper entitled

Restoring the Normal Position of the Free Tarsal Border in Trichiasis.

The essayist began by the introduction of a few anatomical facts bearing upon the subject. He showed that the free edge of the tarsal cartilage in the normal eyelid is placed at an angle of ninety degrees to the surface of the eyeball, and that the eyelashes are inserted at an angle of about ninety degrees to the free border of the cartilage. The angle made by the hairs with the free border may be considerably altered, as in blepharitis ciliaris, without the hairs touching the cornea or surface of the globe. But if the free border of the cartilage is turned inward by shortening of the conjunctival surface of the cartilage from shrinkage caused by inflammation, then it is easy to see how the hairs will sweep over the cornea. This may be

remedied either by lengthening the posterior or shortening the anterior surface of the cartilage. It is not necessary, nor does it occur that the curve of the cartilage is changed. Lengthening the posterior surface is impracticable, but it is proposed to show how the position of the free edge can be restored by shortening the anterior surface. An incision is made just below the upper border of the tarsal cartilage, the lid being stretched downward by an assistant, and the skin and muscular tissue dissected off from the cartilage down to the roots of the cilia. Then an incision is made directly back through the cartilage to the conjunctiva, met by another starting from a line about two millimetres above, and the wedge-shaped piece removed. A narrow ribbon of skin being now cut from the edge of the flap, it is replaced, and the sutures carried in through the edge of the flap, then through the upper border of the cartilage, and out through the upper margin of the incision in the lid. The result of this procedure is apparent, the apposition of the edges of the wedge-shaped wound of the cartilage is good without sutures, and the normal appearanee of the lid restored. To avoid cutting through the conjunctiva when making the incision through the cartilage the tactile sense of the finger placed on the inner side of the conjunctiva at the free border is sufficient, but a buttonhole at this point does no harm, and does not affect the result or the healing.

Dr. B. Pitts, of St. Joseph, Mo., next read a paper on

The Best Method of Operating for Entropion.

His paper was an exposition of the advantages of electrolysis not only in removing the troublesome hairs which had assumed faulty position, but also in producing resolution and absorption of the thickened and infiltrated tissues, and in this way, even when relief was only partial, preparing the way for the easier performance of blepharoplastic operations.

Dr. Jones, of Chicago, Ill., spoke of the importance of the subject and the uncertainty of the ultimate result. He had seen several cases where the immediate effect of Dr. Hotz's

operation was all that could be desired, but would like to know if the relief was permanent. Some of the cases did not appear so well later on.

Dr. Holcombe, of New York, spoke of a method which he had put into practice, of placing the hairs in position, turned away from the cornea, and holding them in that position by silk surgeon's plaster. He had invariably had excellent results and renewed the application from time to time as required.

Dr. Frothingham, of Ann Arbor, Mich., thought that Dr. Hotz's operation will give better results than anything we now have. The principal trouble will be in reducing the relaxation of tissue.

Dr. D. A. Thompson, of Indianapolis, Ind., said that while country doctors could not muster as many cataracts as some of our foreign brethren, they had an abundance of this variety of trouble. He thought that no one operation would ever be found suitable for all these cases, and that procedure must be modified to suit circumstances.

Dr. Keyser, of Philadelphia, had considerable success by removing the entire cartilage.

The President said that Dr. Hotz had apparently dropped the idea of curving out the cartilage, and wished to know the reason. The reply was that the idea of the incurvation of the cartilage had been found to be incorrect, and that therefore there was no need to alter the curve.

Dr. E. Landolt, of Paris, Frace, read a paper on

Operation for Strabismus.

He called attention to the marked peculiarities distinguishing this from all other operations on the eye, because it always concerns both eyes. Squint is always binocular. A man with one eye does not squint. A cyclops has no squint. Cataract and other operations may be done without taking into consideration the condition of the other eye, but not so with strabismus operations. He dwelt upon the precautions to be taken for the success of the operation, and the causes of con-

vergence and divergence. A most powerful aid in the correction of squint is the desire for binocular vision. Without binocular vision there is only an apparent cure, a cosmetic effect, because it leaves out the most powerful aid in the cure of strabismus. It is necessary before operation to determine the nature and measure, the degree of the refraction and accommodation, to find how far vision has been lost, and to remedy it if possible. The agents for this purpose are atropia, glasses, cessation from work, and orthoptic exercises. He never operates without satisfying himself that he has got the full effect of non-surgical measures. If the correction is made in the child while young and without these precautions, divergence may occur later. The difficulty of determining beforehand just how much to do to get a certain effect was remarked, and that it was better to do too much than too little. It is easier to diminish than to increase the effect. Dr. Landolt never operates on two homonymous muscles at once. He rather does a tenotomy of one, and an advancement of its antagonist. The remedies for over-effect in operations for convergent squint are stoppage of atropia, removal of stitches from advanced muscle, and use of the other eye. No case should lose its power of convergence or divergence after the operation, as without that power binocular vision would be impossible. If divergence persist, advance the tenotomized muscle. This can easily be done to the tenth or twelfth day.

In divergent squint, on the other hand, the danger is in doing too much. If the divergence is of long standing and the eye amblyopic, then tenotomize with advancement, or do two tenotomies. Do not use atropine, but exercise the eye in the required direction. He often prefers advancement to tenotomy to remedy faulty position. It is more complicated but not more dangerous, and has a greater and more favorable effect than tenotomy. The operation for strabismus is not to be considered as a cure, but only as an adjunct to orthoptic treatment.

THIRD DAY—AFTERNOON SESSION.

Dr. George F. Stevens, of New York, read a paper on

SOME IMPORTANT PROBLEMS RESPECTING INSUFFICIENCY OF THE OCULAR MUSCLES.

He said that anomalies of the ocular muscles were of as frequent occurrence as those of refraction and accommodation, while the literature of the subject was very scanty, and what existed would lead one to infer that only one of the muscles was liable to insufficiency—the internus—while the deviations in other directions had been ignored or barely mentioned.

The object of the paper was stated to be to suggest certain problems, rather than to explain apparent contradictions. For instance, a case showed with a prism over one eye, insufficiency of the externi of 8° at twenty feet, and at one foot insufficiency of the interni of 10°. There was an adducting power of 50°. Now, there could not be an insufficiency of both interni and externi at the same time. Another case, with the prism eliminated from the question, had diplopia, homonymous of 4° at twenty feet, and crossed of 5° at two feet. Here seems to be a contradiction of results and a problem to explain.

Dr. Stevens then entered into an explanation of the terms which he used in designating the muscular variations. He uses Orthophoria to express the correct equable balance; Heterophoria to express any departure from it. He divides Heterophoria into Esophoria, a tending of the visual lines inward; Exophoria, a tending outward; and Hyperphoria, a tendency of one image to rise above the other. Latent heterophoria is as common as errors of refraction are, but is often overlooked, and is much more difficult to discover. In case hyperphoria exists, in what way are we to determine in which muscle the fault lies? Again, how shall we determine the absolute amount of anomaly and the best manner of procedure? Dr. S. then detailed his own mode of examination, always prescribing

prisms of a degree somewhat less than the hyperphoria. He believed it was better to correct too little than too much. He does not believe that prisms are curative or permanently beneficial, but that they are of much use in diagnosis.

Dr. J. F. Fulton, of St. Paul, Minn., in his paper, entitled the

ADVANTAGES OF EARLY OPERATION IN STRABISMUS.

spoke of the difficulty of overcoming diplopia or amblyopia where they exist after operation. He agreed with Soelberg Wells, that suppression of the image results in amblyopia from disuse, where the trouble occurs in children, and even in cases where the difficulty is of a later date. He favors operating in children at an early date. If operation is not admissible, then the other eye should be covered, and the squinting eye exercised carefully at short intervals. Amblyopia met with in strabismus is either primary or secondary. If primary and congenital nothing can be done, but he thought many cases were secondary and due to the same cause as the squint. The vision of the defective eye sometimes rapidly deteriorates when the image is suppressed. A case in point was one where V. = $^{20}/_{xx}$ in the right eye, and $^{10}/_{xxx}$ in the left, raised to normal by a suitable glass. Some time after the fixing eye was lost by accident, when the left eye was found to have only $^{20}/_{lxxx}$. Other cases were quoted, one of two members of the same family, one of whom was operated on, with the result of improving the vision from $^{20}/_{xl}$ to $^{20}/_{xxx}$, while in the other, which was let alone, the degree of strabismus remained stationary, but the amblyopia increased.

Dr. C. H. Abadie, of Paris, France, read a paper on

FAULTY EYE MOVEMENTS AND THE MEANS OF REMEDYNG THEM,

which was most concise and exhaustive. He reviewed the modes of diagnosis, particularly in relation to the differentiation between those cases that require complete and partial

tenotomy, and dwelt on the ability to control the amount of correction by removing more or less of the muscular fibres. It is easy to change a partial tenotomy into a complete one, if it be necessary.

Dr. E. O. Shakespeare, of Philadelphia, Pa., read a paper entitled

On the Strength of the Superior Recti Muscles as a Cause of Asthenopia.

He found many cases of asthenopia not relieved by correction of the refraction, and external and internal recti in which there was want of proper action of the superior or inferior recti. In testing, we may find that the displacement of the image is greater when a prism is placed over one eye than when over the other. If you use a correcting prism you will find one superior rectus stronger than the other. To correct the muscular error, if there is an error of refraction, he discentres the lenses, and if no refractive error is present, then he puts on prisms.

Prof. F. Manolescu read a paper on "Tenotomy of the Superior Recti" in certain cases of *Conjunctivitis Granulosa.* The object of this tenotomy is to turn the globe downward to carry the cornea out of the way of the upper lid and thus prevent pannus from friction.

Dr. Landolt gave a demonstration of his method of strabometry, and showed how easily the patient and tapes were placed in position, and the accuracy of the result. The tapes are made by Dubois, rue Monsieur le Prince, Paris.

Dr. H. Power, of London, after stating that it was not so long since the operation was done like dividing a tendon in orthopedy, said that he is not now so certain as formerly of a positive cure. A great deal of care is now taken of the cases before operating, and even with it all we will have cases that appear to be just as bad after operation as before.

Dr. Shakespeare rose to ask about the successive removal of muscular fibres by Dr. Abadie in small degrees of insuffi-

ciency. He wished to ascertain something of the permanency of the relief afforded.

Dr. Landolt, in replying in the absence of Dr. Abadie, said that he could not answer that question, as he had never done that operation, and probably never would do it. He always divided the whole tendon. He believed that Dr. Abadie claimed a very good and durable effect.

Dr. G. S. Norton, of New York, asked if Dr. Stevens would tell what was the matter where both external and internal insufficiency appeared to exist, without hyperphoria. The doctor replied that that was just one of the problems he had submitted to the Section, and that he did not know.

Dr. J. A. White, of Richmond, Va., spoke of the great value of Dr. Landolt's paper, and added a few remarks on his own results in advancement of the capsule, with which he had obtained as good results in cases of considerable degree as by advancement of the muscle.

Dr. Thompson, of Indianapolis, was afraid that after all a large proportion of cases return to their original condition.

The President submitted a question as to the time for operation.

Dr. D. S. Reynolds, of Louisville, Ky., suggests the exercise of the retina with strong lenses, even where considerable amblyopia exists, with the hope of improving vision before operating.

Dr. B. J. Baldwin, of Montgomery, Ala., is satisfied that there are many cases in which amblyopia may be prevented by an early operation. A year or two ago he believed that amblyopia was congenital, but he does so no longer.

Dr. Landolt, in closing, thanked the section very heartily for their kindness and indulgence, and expressed his pleasure at the free discussion which had been drawn out.

Dr. A. G. Heyl, of Philadelphia, Pa., then addressed the Section on

ABNORMALITIES OF THE VISUAL AXIS.

He said that the definition of the visual axis is involved in

obscurity, and is as well a matter of extreme importance. He reviewed the terms and definitions at presest used, showing their incorrectness, as "*Gesichtslinie, Blicklinie,*" and their mechanical and not physiological basis. Collimating axis is better, but it belongs essentially to monocular vision, in which one eye dominates over the other.

His true definition is a line from the macula, directed directly in front when the eye muscles are in a state of rest or equilibrium. It is a conception low down in consciousness, as is the conception of the median plane.

Through the pull of the tendons on the sclera, the recti muscles keep the macula pointing straight ahead. He then entered into the subject of the origin of the macula—whether from the fœtal cleft, which would call for a rotation of at least ninety degrees, which is said to have been observed. Then he says: " My position, for want of a better, is that the pull of the recti, antagonized by the ciliary muscle, is the factor in the production of the macula." The position of the macula to the outside of the centre, he accounts for by the antagonism of the three third-nerve recti to the one abducens, causing the point of equilibrium to be moved to the outside.

Dr. Ole Bull, of Christiania, Norway, wished to know how Dr. Heyl accounted for the existing of two maculæ in some birds with restricted vision.

Dr. Heyl in closing, in aswer to Dr. Bull, stated that he knew that those cases existed, but that he would have to examine the arrangement of the muscles before being ready to explain it. He thought the same process of tension might take place in two different directions.

THURSDAY, SEPTEMBER 8—FOURTH DAY—MORNING SESSION.

Professor X. Galezowski, of Paris, France, opened the session by reading a paper entitled

THE CURABILITY OF DETACHMENT OF THE RETINA.

He stated that the pathology of the disease is not entirely clear.

The writer had observed in twenty years, among 152,000 persons, 789 detachments, of which 87 were in both eyes, 63 in emmetropic and hypermetropic eyes, and 194 were traumatic; 13 occurred after extraction of cataract, 18 were syphilitic, and 4 in sympathetic affections. Tumor was found in 10 cases. Twice only he found detachments in retinitis albuminurica, although he frequently saw this affection. Cataract is very frequent in detachment of the retina.

Occasionally tearing of the retina is noticed, with the corpus vitreum introduced behind the retina, between the choroid and the retina. He could say that the rupture of the retina is not so frequent, and considers it the consequence and not the cause of the detachment. Professor Graefe has said that the detachment is not curable, and the function of the retina is not restored. Dr. Galezowski had seen a case which showed alterations in the retina at the place of detachment, which had been completely cured. The patient gave the usual history of trouble with the vision, coming on suddenly and continuing for one or two or three months, with afterward recovery of sight. He explained the appearance of the fundus as seen by the ophthalmoscope, and illustrated them on the black-board.

The conditions predisposing to detachment were said to be (1) choroiditis; (2) liquefaction of the corpus vitreum. In treating these cases he begins with antiphlogistic treatment, atropia, rest, etc., and he had in seven cases a complete cure—the retina completely adherent, and around the line of the separation atrophy, with pigment-deposit and choroiditis disseminata. The first indication is antiphlogistics. Apply every month two, three, four or five leeches, then atropine, and warm and cold compresses alternately, and in the intervals between the leeches he applies derivative plasters. Inside of five months he has completely cured detachment of the retina. Mercury and potassium iodide are also useful where exudation is present or in cases of constitutional disease.

Fifteen years ago he proposed iridectomy to stop the inflammation of the choroid, but it did no good in that way, although it stopped the iritis. Now he proposes a new opera

tion. He considers the exudation behind the retina as being of the same character as the effusion in pleuritis or peritonitis, and has had an instrument (which he exhibited) made to aspirate the fluid. The instrument is a syringe with a stop-cock and an aspirating-needle. He introduces the needle through the sclerotic at a considerable distance behind the ciliary body and passes it into the globe for some distance. Then he exhausts the air by drawing out the piston. If the needle-point is too far in, no fluid appears in the barrel of the syringe, but on withdrawing the needle gradually the fluid appears, and one, one and a half, or two grams, is generally obtained. There is no inflammation after the operation. By this means two out of seventeen cases operated on were completely cured and there is a certainty of amelioration in all cases.

In old cases he introduces a curved needle from behind forward through the sclera and the detached retina, before introducing the aspirating-needle; and when the fluid is drawn off a catgut ligature is drawn through as a seton and brought tight.

Dr. Abadie, of Paris, France, spoke on the causation of detachment in myopes, setting forth the gradual stretching of the sclerotic in staphyloma and its drawing away from the retina as a cause of the detachment, with remarks on treatment.

Dr. Keyser, of Philadelphia, spoke of Graefe's method of tearing the retina through the detachment with a needle, of DeWecker's trocar, and of the double-needle method. He had never been able to get a permanently good result, although the immediate effect was sometimes very pleasing. He thought well of Dr. Galezowski's instrument, but wished to know how it would act in old cases.

J. Richardson Cross, Esq., F. R. C. S., of Bristol, England, said there was no doubt that the subject was an exceedingly difficult one. He had treated a case with diaphoretics, had pushed pilocarpine, and used the other commonly accepted means of relief, with no change till now. He had done sclerotomy in three eyes, two in one girl. One, in a woman, did no good.

[TO BE CONCLUDED]